KNC-SRV-FD145S Series
Servo Driver

FEATURES

- ***24-60VDC***
- ***2 Channel STO***
- ***Max Continuous Output Current 50A***
- ***1500 Watt Rated Power Range***
- ***Position, Speed, and Torque Control***
- ***Supports RS485, CANopen, EtherCAT, and PROFINET***
- ***Natural Air Cooling***
- ***MODBUS RTU or Pulse and Direction***
- ***Supports Incremental or 16/17-Bit Multi-Turn Magnetic Encoders***
- ***Communication Software***
  - ***º Configure Parameters***
  - ***º I/O Signal Monitoring***
  - ***º Speed and Position Curves***
  - ***º Gain Adjustments***
- ***Programmable Inputs and Outputs***
  - ***º 4 Inputs (3 Digital, 1 Analog)***
  - ***º 2 Outputs (1 Standard & 1 for Brake)***
- ***CE & UL Certified***

DESCRIPTION

The FD1X5S represents our fifth-generation low-voltage servo drive, engineered for a 24-60VDC wide-range supply and power outputs spanning 1200 W to 1500 W. As a high-performance DC servo drive, it supports CANopen, Modbus RTU, EtherCAT, and PROFINET, enabling flexible integration into industrial servo drive systems. The drive also meets CE, UL, and RoHS requirements and integrates STO (Safe Torque Off) for safe and reliable motion control. Built on a new auto-tuning algorithm architecture, the FD1X5S combines an adaptive notch filter with S-curve acceleration profiles to suppress mechanical resonance and reduce operating noise. This enables smooth and stable motor rotation under changing load conditions, making it a reliable DC servo motor drive for demanding motion control applications.

SPECIFICATIONS

Category	Servo Driver	Servo Motor	Description	Power/Brake Cable	Encoder Cable	Rated Power / Rated Speed / Rated Torque
Medium Inertia DC48V	FD145S-AS-000 / FD145S-ES-000	KNC-SRV-SMK80D-0120-30QAK-5DCU	Multi-Turn Magnetic Encoder	M-Y-40A-LJ51-LL-S	E-H-MV-U-LL *E-H-QY-U-LL	1200W / 3000 RPM / 540 oz-in
		KNC-SRV-SMK80D-0120-30QBK-5DCU	Multi-Turn Magnetic Encoder with Brake	M-Y-40A-LJ51-LL-S / BRA-LL-KL		
		KNC-SRV-SMK80D-0150-30QAK-5DCU	Multi-Turn Magnetic Encoder	M-Y-40A-LJ51-LL-S		1500W / 3000 RPM / 675 oz-in
		KNC-SRV-SMK80D-0150-30QBK-5DCU	Multi-Turn Magnetic Encoder with Brake	M-Y-40A-LJ51-LL-S / BRA-LL-KL		

"LL" indicates the cable length (03 = 3m is standard).
*Essential battery power cable for multi turn absolute encoders, not needed if using as single turn.
^Cable exits away from shaft (Tail Out).

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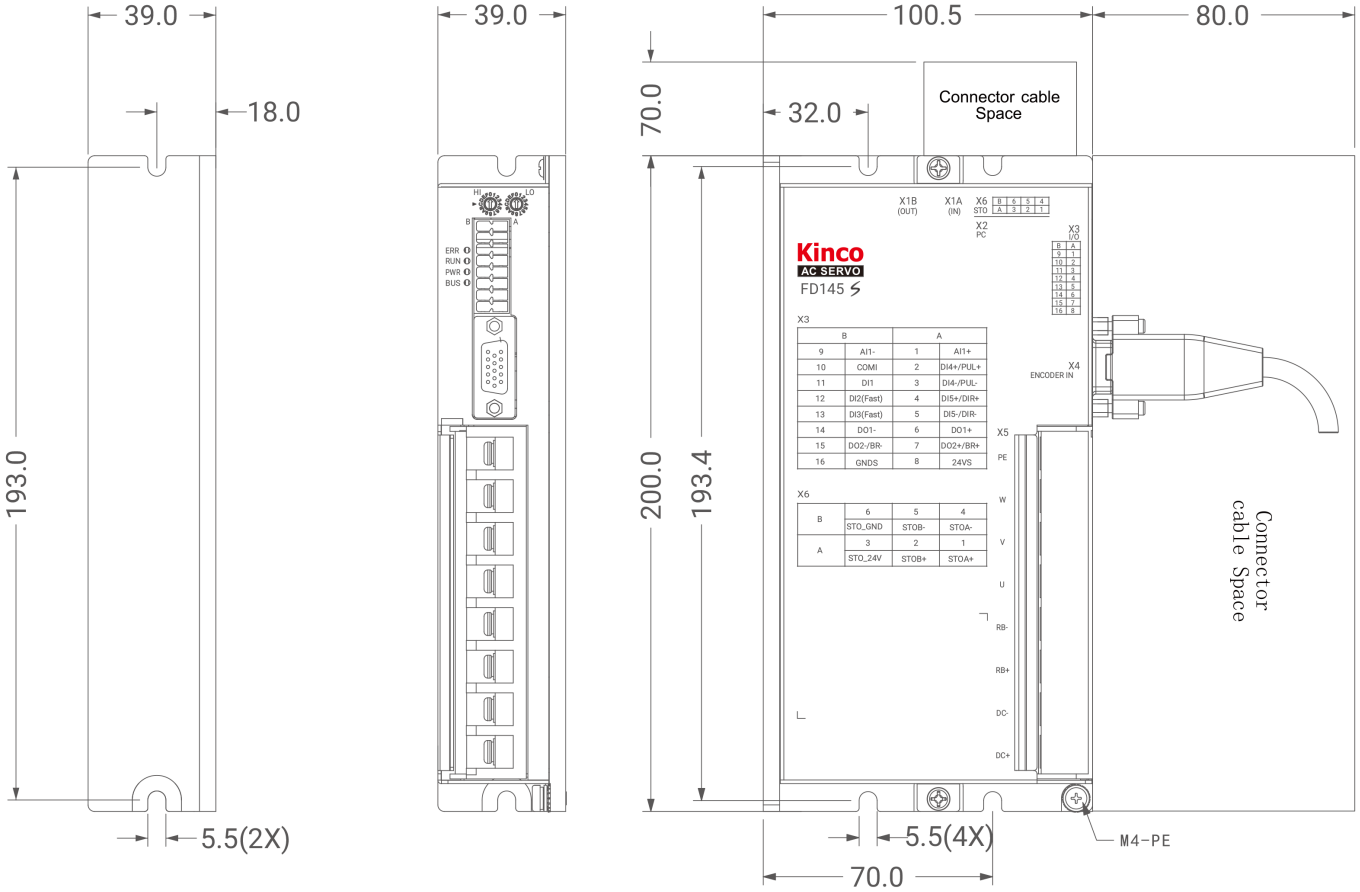
DIMENSIONS



Units are in mm

KNC-SRV-FD145S Series Servo Driver

ANAHEIM AUTOMATION

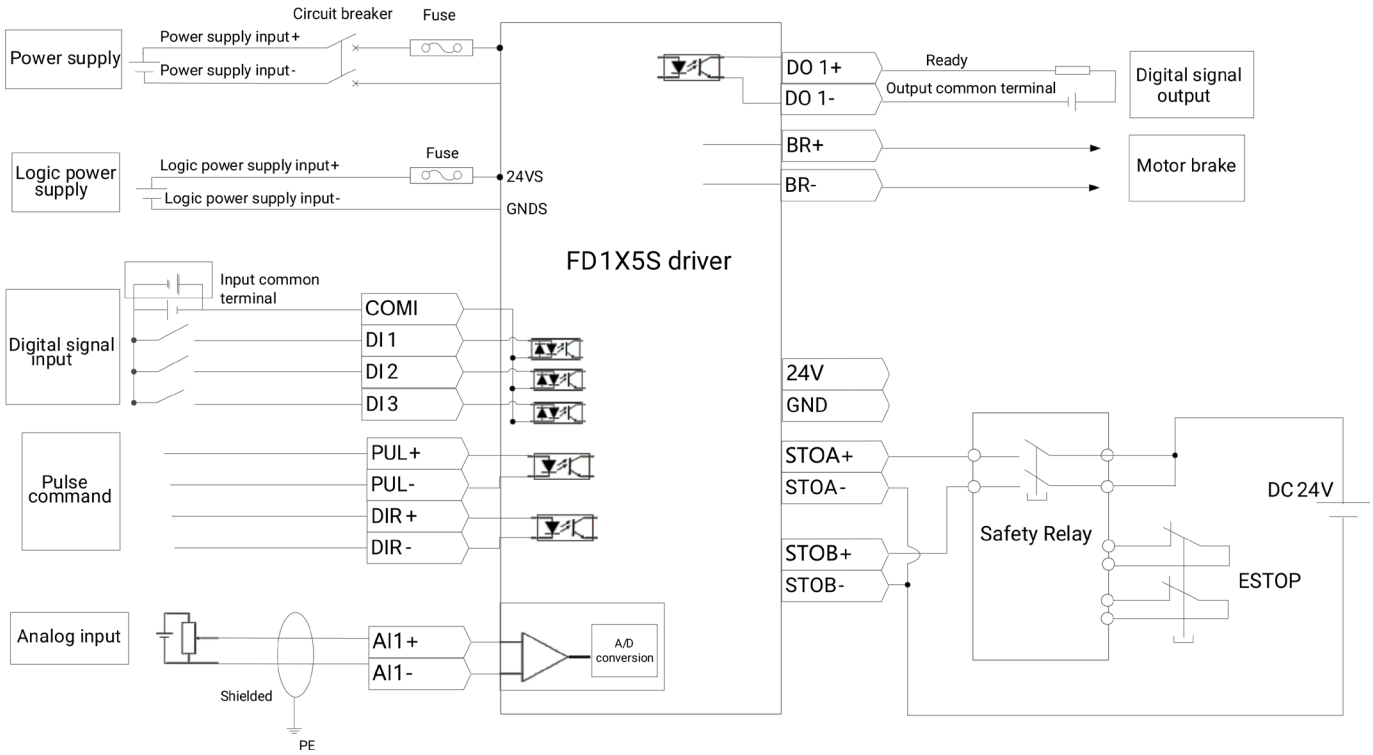
TECHNICAL SPECIFICATIONS

Model Parameter		KNC-SRV-FD145S Series
Power	Main Supply Voltage	24VDC-60VDC
	Control Circuit Voltage	DC24V (Allowable Fluctuation Range 18V-30V), 500mA+Holding brake coil current, the logic power is an isolated power supply with an isolation voltage of 500 VDC
Current	Max Current (RMS)	50Arms (Up to 35A without auxilliary cooling plate)
	Peak Current (PEAK)	160A
Feedback Signal		Tamagawa Protocol, Incremental Encoder
Energy Consumption Brake		Need external brake resistance (depending on the operation condition, mainly used in rapid start-stop occasions)
Energy Consumption Brake Voltage Absorption Point		DC63V ± 2V (Default Value, Adjustable via Software)
Over-Voltage Alarming Threshold		DC70V ± 2V (Default Value, Adjustable via Software)
Under-Voltage Alarming Threshold		DC16V ± 2V (Default Value, Adjustable via Software)
Cooling Method		Natural Air Cooling
Weight		1.91 lbs
Logic Loss Power		2500 mW
Safety Function STO		2-Channel STO, STO interface can be connected with the safety controller, safety switch, safety sensor, etc., to realize the safety function of the driver. Input voltage range: 24 VDC +15%; Input current: 2.3 mA (Typ.); Logic level standard: IEC 61131-2 Type 1; Input impedance: 10 kΩ.
Input Specification	Digital Input	3-Channel Digital Inputs, Common COMI Port, High Level: 12.5V~30VDC, Low Level: 0~5VDC; Max Freguency: 1KHz, Input Impedance: 5KΩ. Among them, DI2 and DI3 are high-speed inputs, with a response time of ≤10 μs and an input impedance of 2.7 kΩ.
	Pulse Input	2-Channel Pulse Input, Pulse+Direction, CCW+CW, phase A+phase B (12V~24V). Max Frequency: 500KHz. It can be multiplexed as 2-channel DI (DI4 and DI5) by software setting.
Analog Input		1-Channel Voltage Type Analog Input, 12bit, -10V~+10V, Differential Connection Method.
Output Specification	Digital Output	1-Channel Digital Output, Open Collector Output, Max Voltage: 30V, Driving Capacity: 100mA.
	Brake Output	1-Channel Brake (Voltage: 24V, Output Capacity: 1A, can directly drive the brake). It can be multiplexed as 24V source output or open collector output.
Station Number		Two 16-bit rotary DIP switch are provided for setting the station number.
Gantry Synchronization		AS version supports Gantry synchronization.
USB		Debug linterface, can use Kinco PC software to connection.
Protect Function		Overvoltage protection, undervoltage protection, motor I^2T protection, short circuit protection, drive overheat protection.
Bus Function	Modbus / RS485	It supports a maximum of 115200 bps and can communicate with the controller using Modbus RTU.
	CANopen	It supports a maximum of 1Mbps and can communicate with the controller using the CANopen.
	EtherCAT	Support CoE(CiA402 protocol) and CSP/CSV/PP/PV/PT/HM mode, Communication Speed 100Mbps.
	PROFINET	Non periodic parameter read and write; Message 1, message 3, message 5, message 9, message 102, message 105, message 111; Support IRT synchronous mode; Support absolute value encoder; Support DSC dynamic servo control, Supports additional message 750.

TECHNICAL SPECIFICATIONS

Model Parameter	KNC-SRV-FD145S Series
Working Temperature	-20°~+40°C (no freezing), when the operating temperature exceeds 40°C, the driver needs to be derated.
Working Humiditing	Less than 90%RH (no condensation)
Storage Temperature	Short-term storage (with 1 month) : -20°C ~ +65°C
Storage Humidity	90%RH (no condensation)
Protection Class	IP20 (Power supply terminal X5 only meets IP00 protection level)
Altitude	Less than 3000m, power derating 1.5%/100m between 1000m and 3000m
Atmospheric Pressure	70kpa~106kpa
Installation Site	It needs to be installed in an electrical cabinet with an IP54 protection class. The length of the control cable and bus cable installed on the equipment shall not exceed 30 meters, and the length of the power cable and encoder cable shall not exceed 10 meters.
Installation Method	Install vertically or horizontally

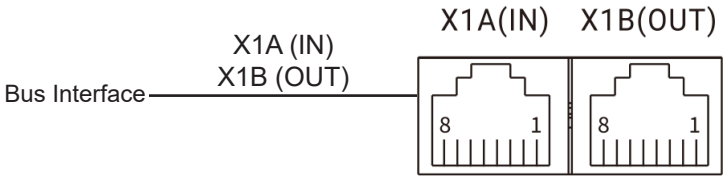
TECHNICAL SPECIFICATIONS



INTERFACE DESCRIPTION

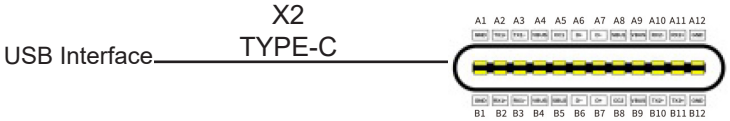
Bus Interface

Model	FD1x5S-AS-000		FD1x5S-ES / PS-000
PIN #	RS485/ Modbus	CAN	EtherCAT / PROFINET
1	/	CAN_H	TD+
2	/	CAN_L	TD-
3	/	GND_CAN	RD+
4	485B	/	/
5	485A	/	/
6	/	/	RD-
7	/	DATA+	/
8	/	DATA-	/



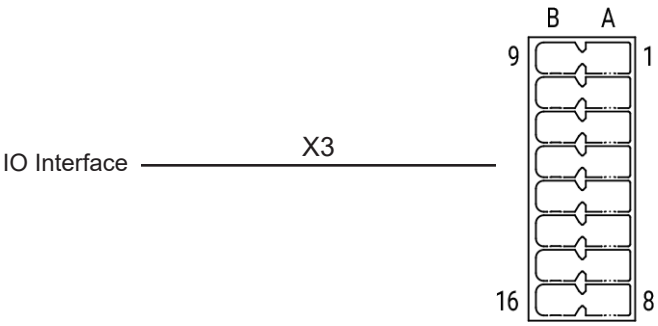
USB Interface

PIN Number	Signal
A1 & B12	GND
A6 & B6	USBDP
A7 & B7	USBDN
A4 & B9	+5V



IO Interface

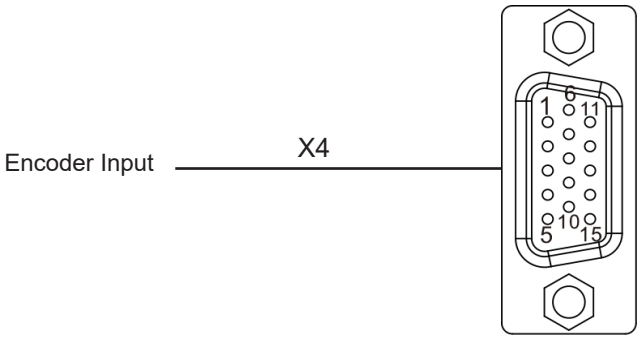
B		A	
PIN #	Signal	PIN #	Signal
9	AI1-	1	AI1+
10	COMI	2	DI4+/ PUL+
11	DI1	3	DI4-/ PUL-
12	DI2(Fast)	4	DI5+/ DIR+
13	DI3(Fast)	5	DI5-/ DIR-
14	DO1-	6	DO1+
15	DO2- /BR-	7	DO2+/ BR+
16	GNDS	8	24VS



INTERFACE DESCRIPTION

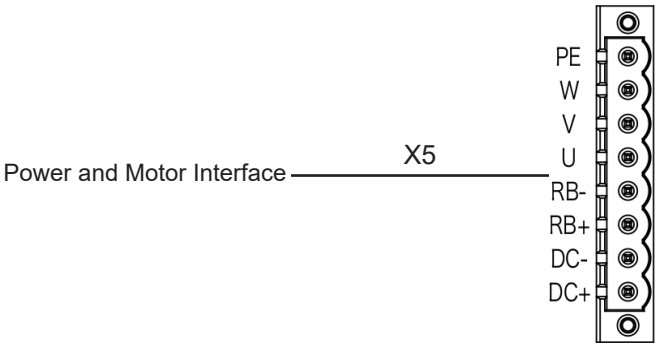
Encoder Input

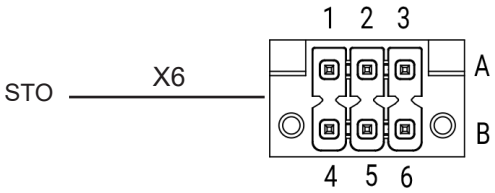
PIN No.	Incremental	Communication
1	+5V	+5V
2	GND	GND
3	(PTC)	(PTC)
4	U	/
5	/U	/
6	Z	/
7	B	/
8	A	/
9	W	SD+
10	V	/
11	/Z	/
12	/B	/
13	/A	/
14	/W	SD-
15	/V	/



Power and Motor Interface

PIN No.	Signal	Pin Specification
1	PE	Servo motor power supply output end and motor grounding end
2	W	
3	V	
4	U	
5	RB-	External brake resistance input
6	RB+	
7	DC-	Drive power input
8	DC+	



STO

PIN No.	Signal	Description
3	24V	24V power supply, logic electric output, can be jumbled to STOA and STOB for testing
6	GND	
1	STOA+	STO safety interface A, input voltage range 24VDC ± 15% Input Current: 2.3mA (Type) Logic level standard: IEC61131-2 Type 1 Input impedance: 10KΩ
4	STOA-	STO safety interface B, input voltage range 24VDC ± 15% Input current: 2.3mA (Type) Logic level standard: IEC61131-2 Type 1 Input impedance: 10KΩ
2	STOB+	
5	STOB-